

Applied Science and  
Early Adopter Activities at SPoRT

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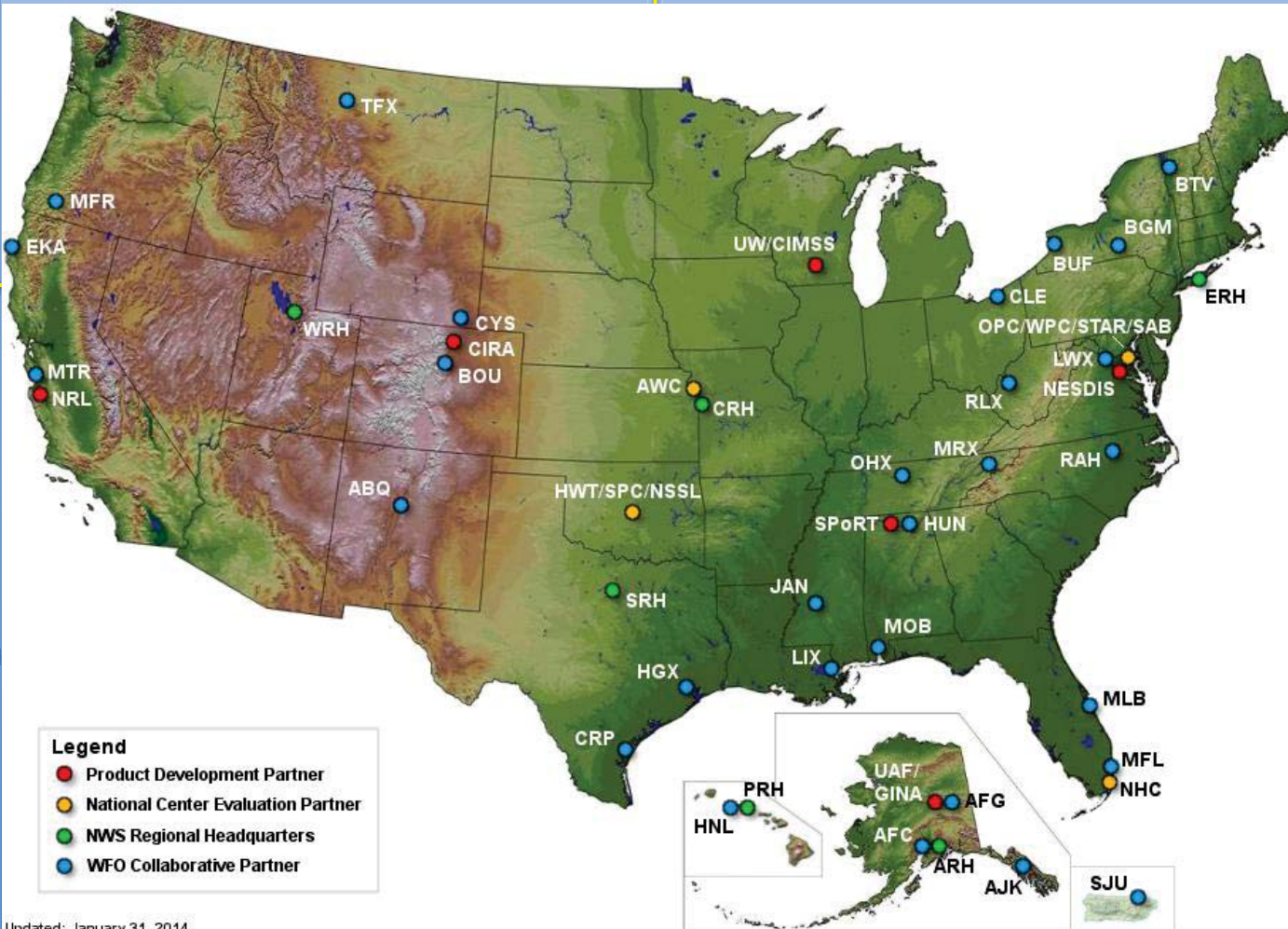
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NASA Short-term Prediction Research  
and Transition (SPoRT) Center,  
Huntsville, Alabama

[weather.msfc.nasa.gov/sport](http://weather.msfc.nasa.gov/sport)

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NASA's Short-term Prediction Research and Transition (SPoRT) Center supports the transition of unique NASA and NOAA research activities to the operational weather forecasting community.

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Our primary partners are NOAA's National Weather Service, their Weather Forecast Offices (WFOs), and National Centers.

These organizations predict natural hazards and also assist in the disaster assessment process, benefitting from remotely sensed data.

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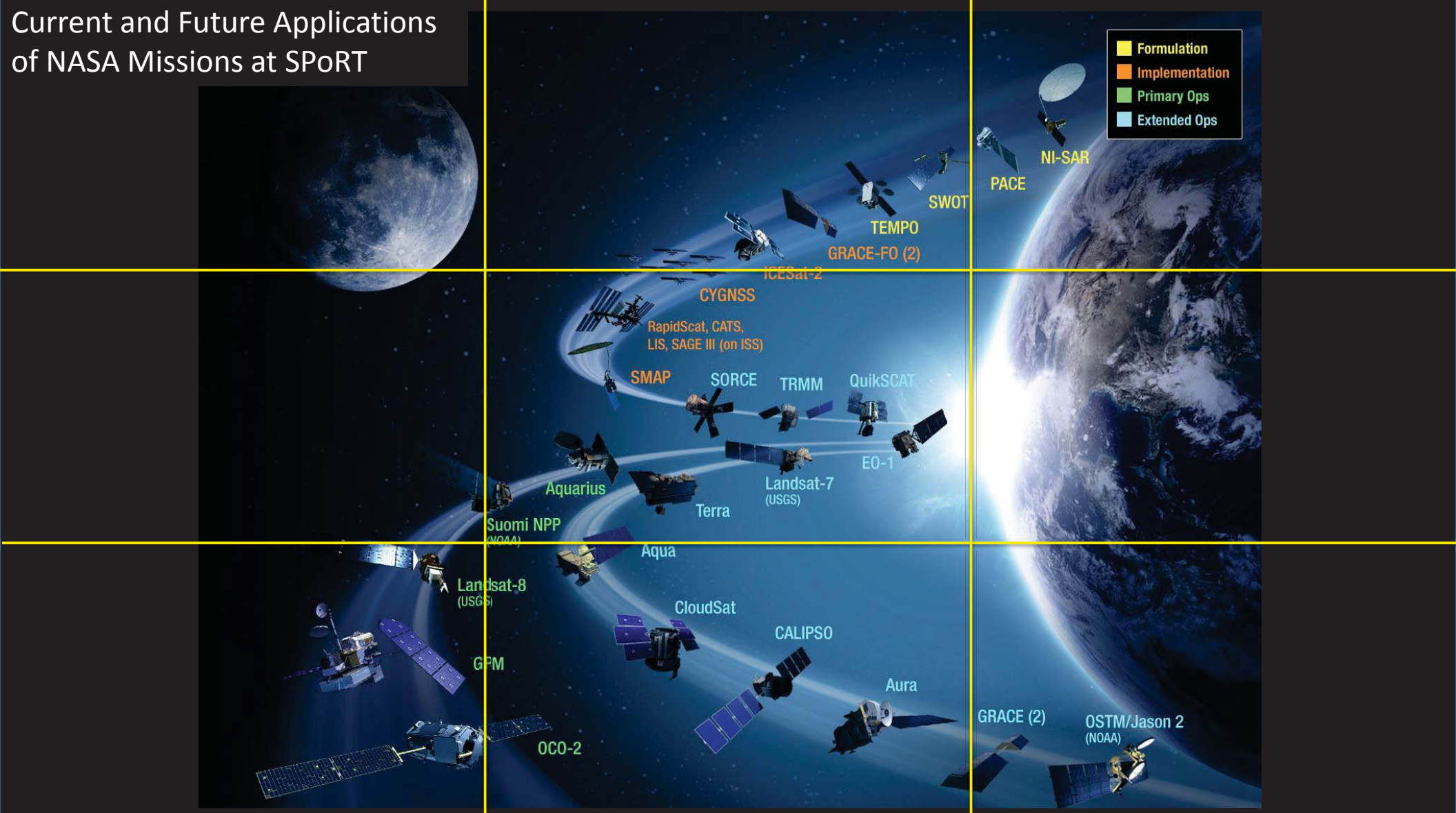
In 2013, SPoRT continued to transition high resolution satellite imagery, derived products, and value-added analysis to WFO partners and NASA's Applied Sciences Program.

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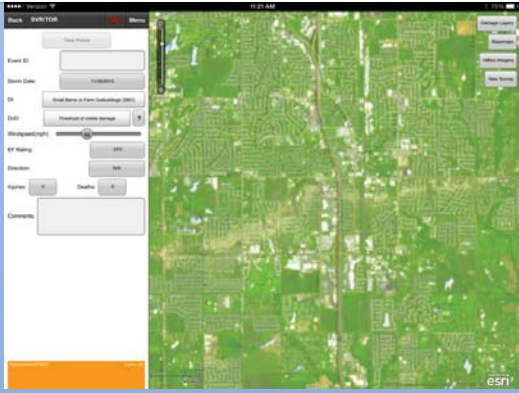
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# Current and Future Applications of NASA Missions at SPoRT



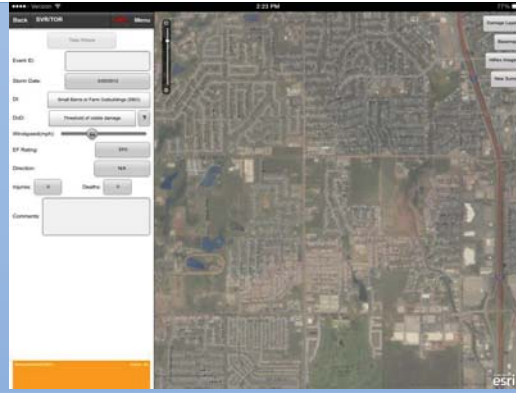


ASTER: Moore, OK



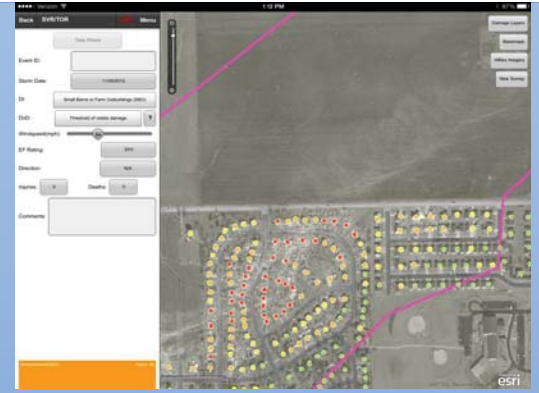
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ISERV: Moore, OK

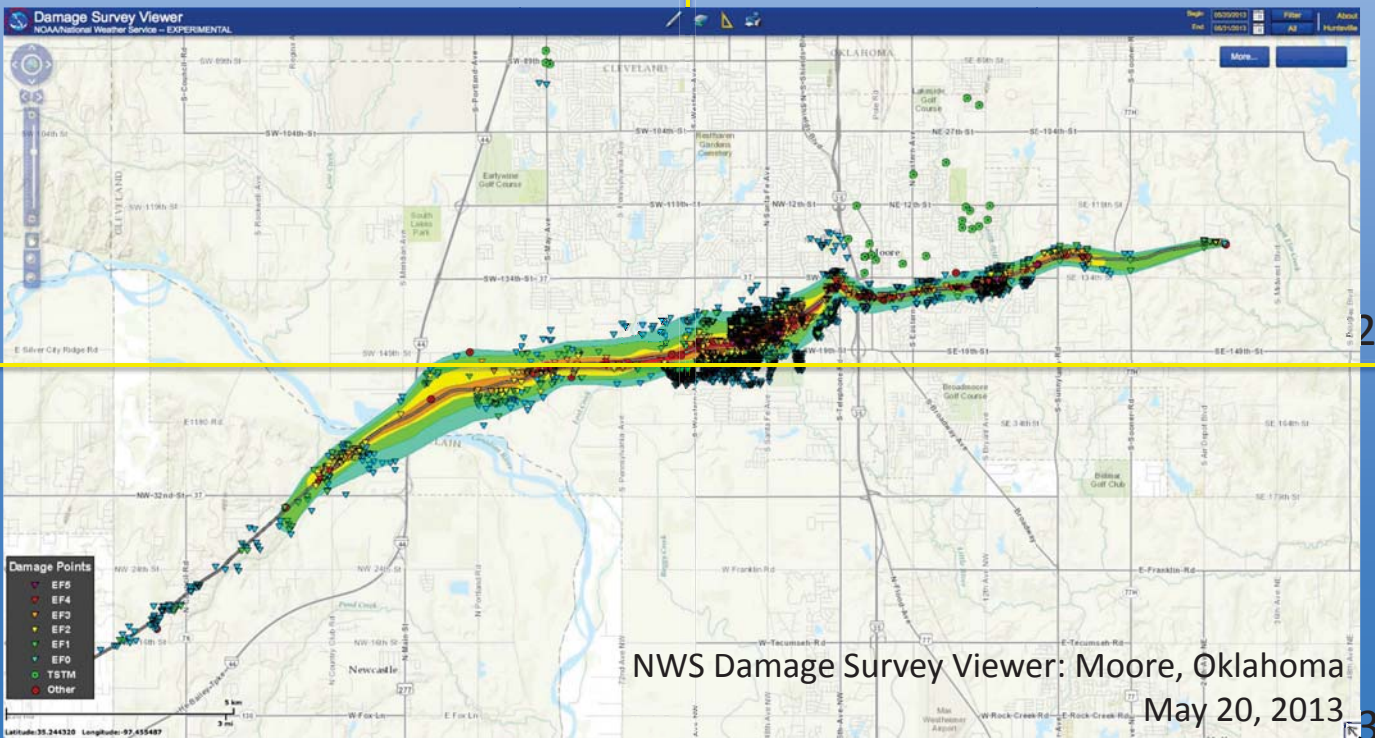


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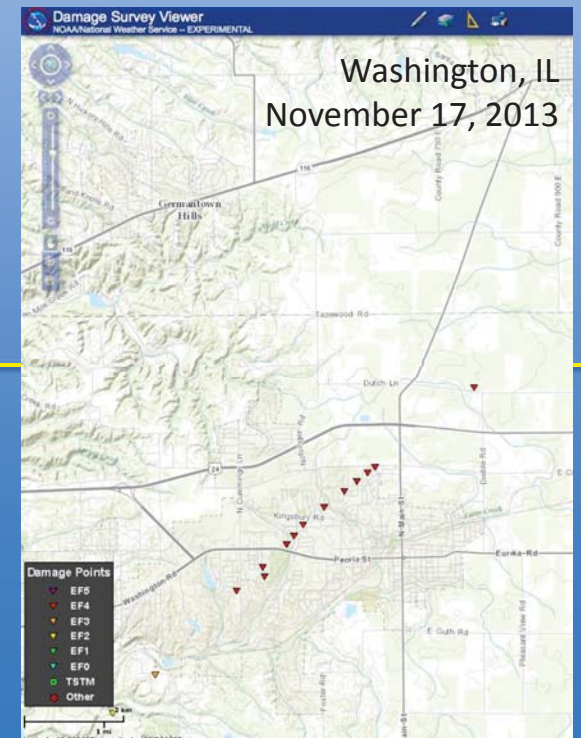
Worldview: Washington, IL



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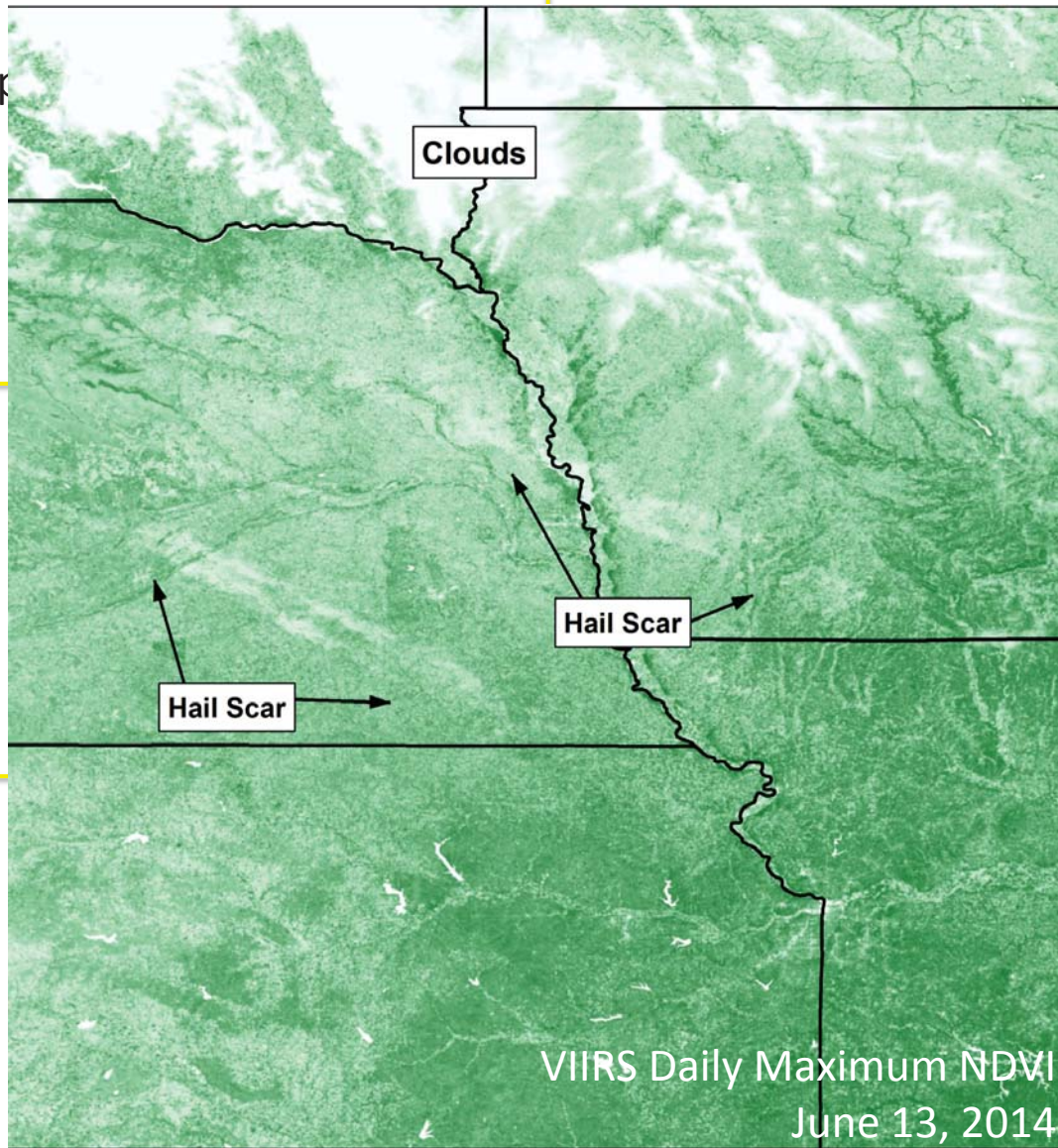


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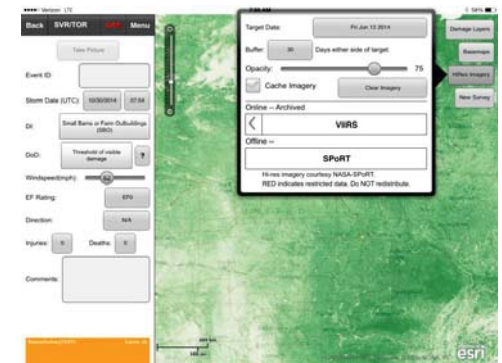
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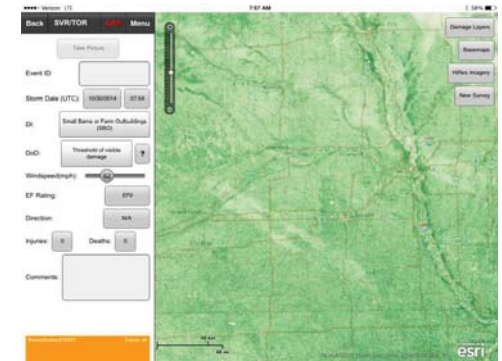


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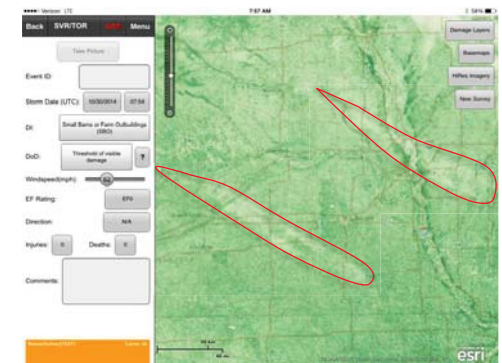
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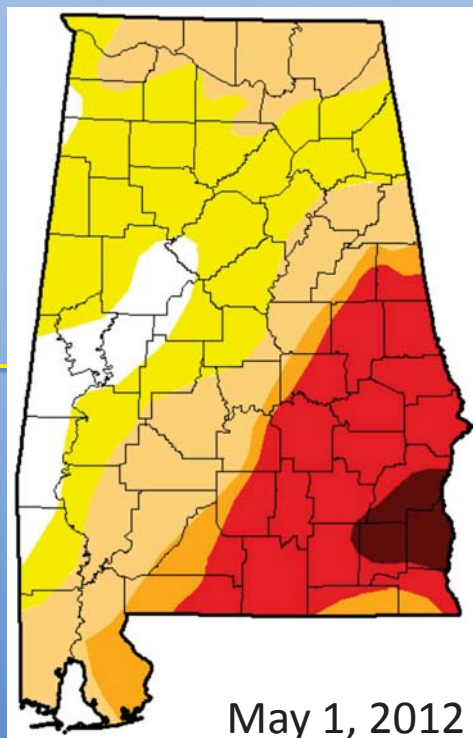


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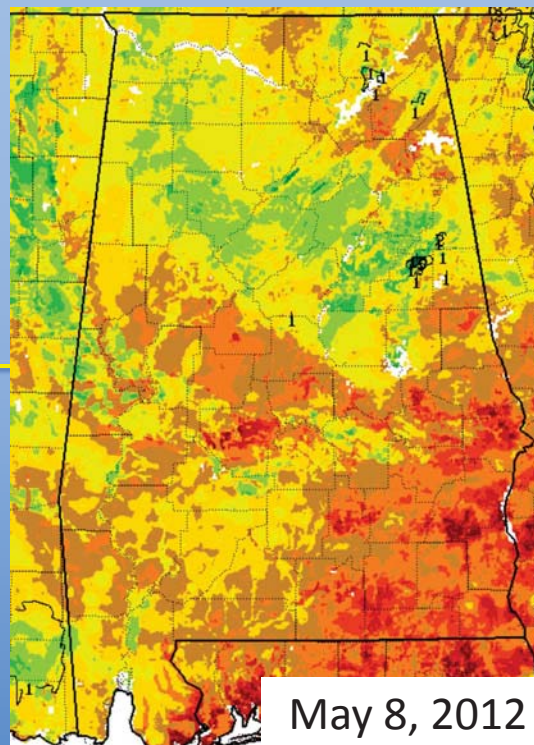


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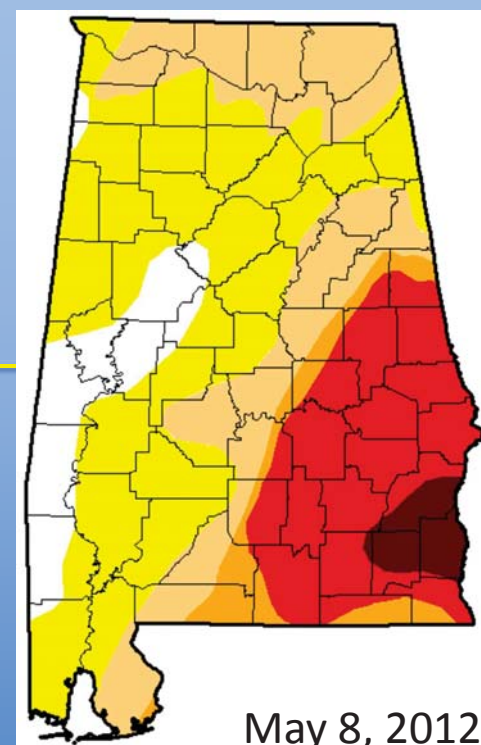
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Intensity:



*The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.*

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### SPoRT soil moisture products guide the U.S. Drought Monitor

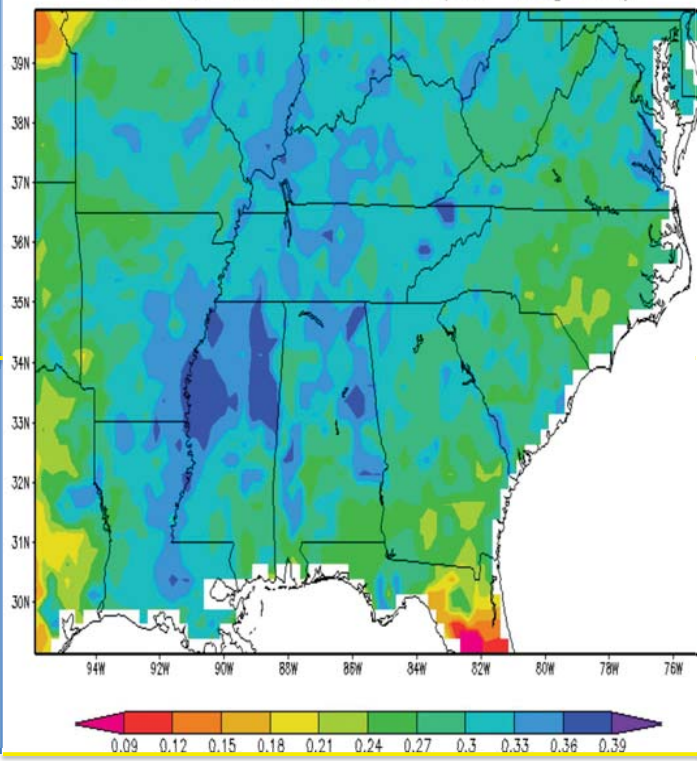
- High resolution output from the NASA Land Information System (LIS) provides real-time soil moisture and temperature output to assist in flood, drought, and convection forecasting.
- In this example, LIS-derived soil moisture was used to adjust drought characterization from D0 to D1 for northeastern Alabama. Drought categories impact the type of state and federal aid available to farmers.

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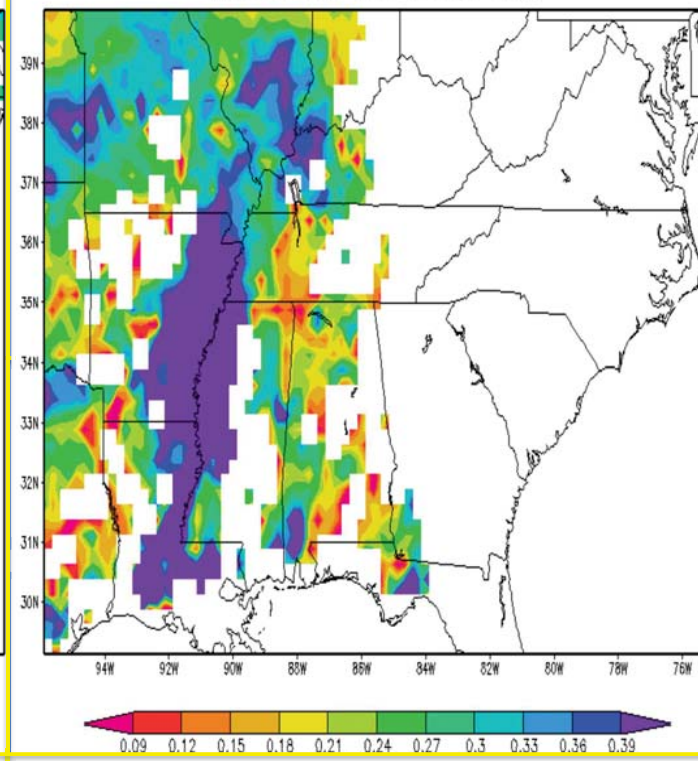
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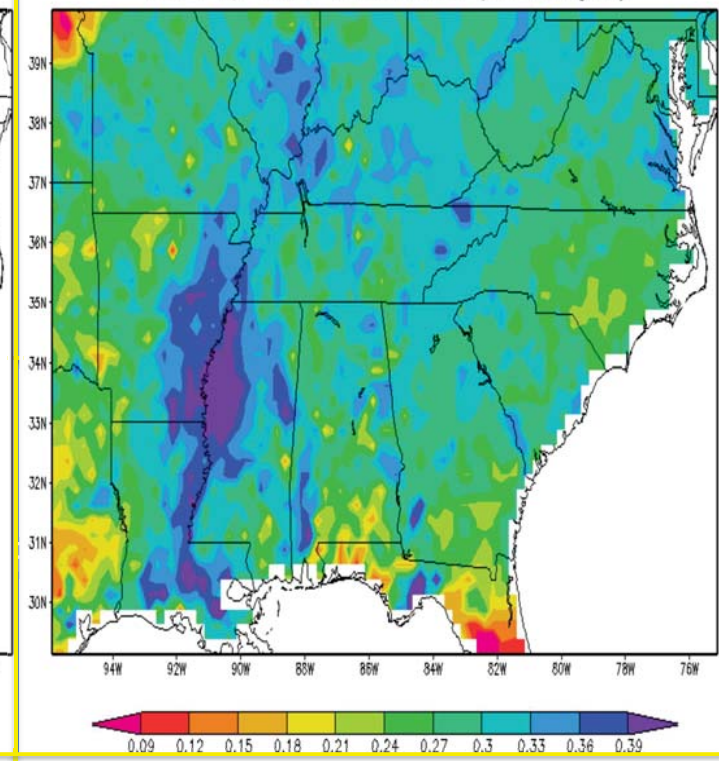
12Z 1 Apr 2013 Soil Moisture (DA3 Background)



Observations 12Z 01 Apr 2013



12Z 1 Apr 2013 Soil Moisture (DA3 Analysis)



## Impact of satellite-based soil moisture observations for an early spring irrigation case study

- Background (LSM without soil moisture observations) forced only by precipitation, so it is unable to capture the magnitude of moist soil in areas of irrigation because it is not associated with precipitation (left)
- Irrigation is heavy along the Mississippi River in early April, leading to near-saturated soils in some regions as observed by Soil Moisture Ocean Salinity mission (SMOS; middle)
- Assimilating observations into the model (right) appropriately increases soil moisture content in regions of known irrigation
- SPoRT is an “Early Adopter” of SMAP, using SMOS data to prepare for Soil Moisture Active Passive (SMAP) applications

Each panel is 1368x768

Insert GPM / Odile Video

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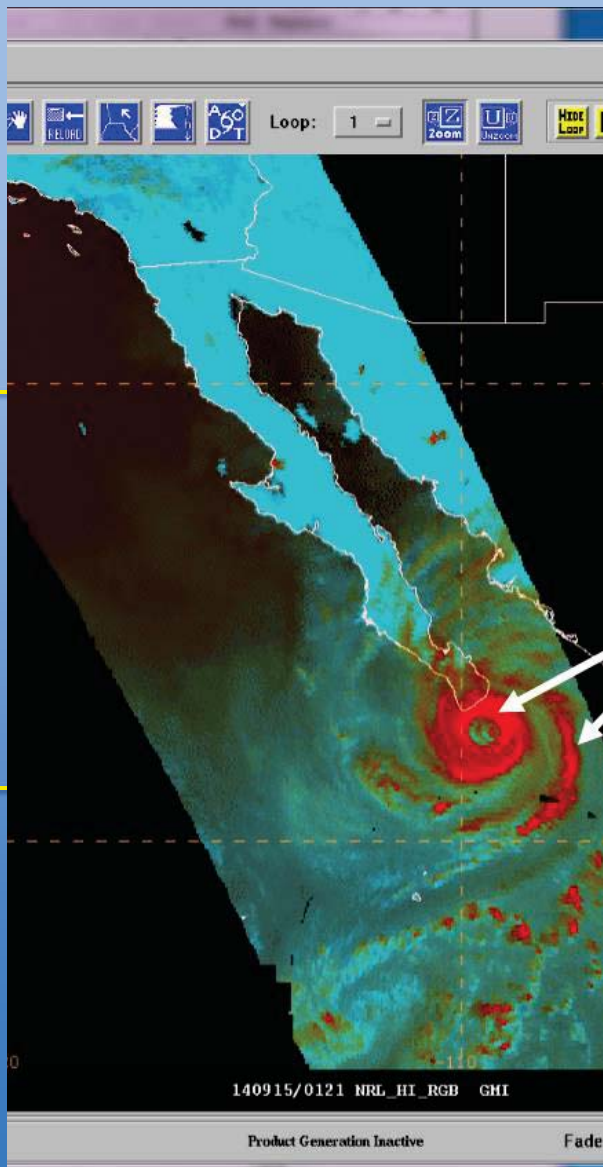
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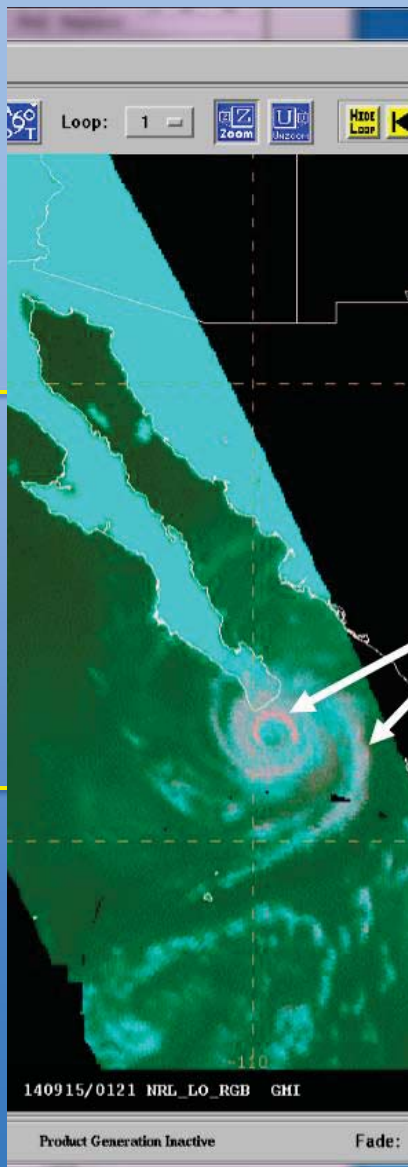




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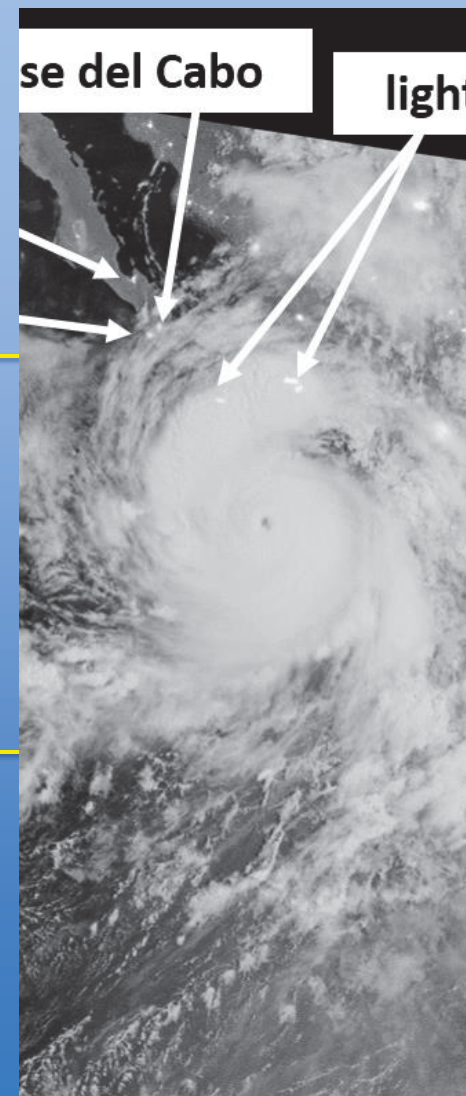
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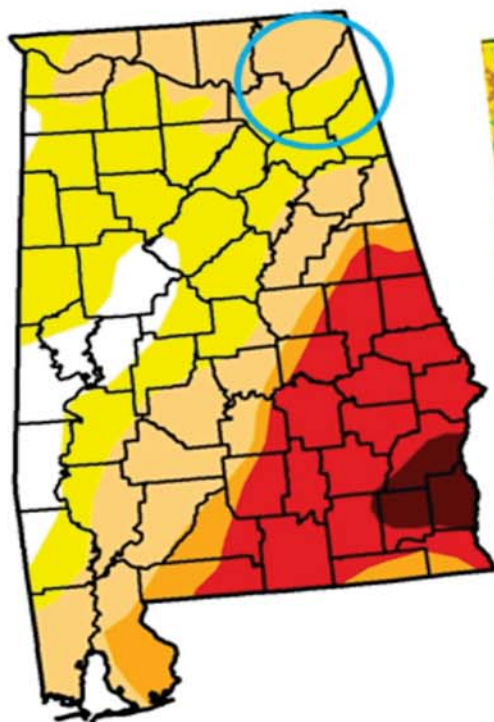


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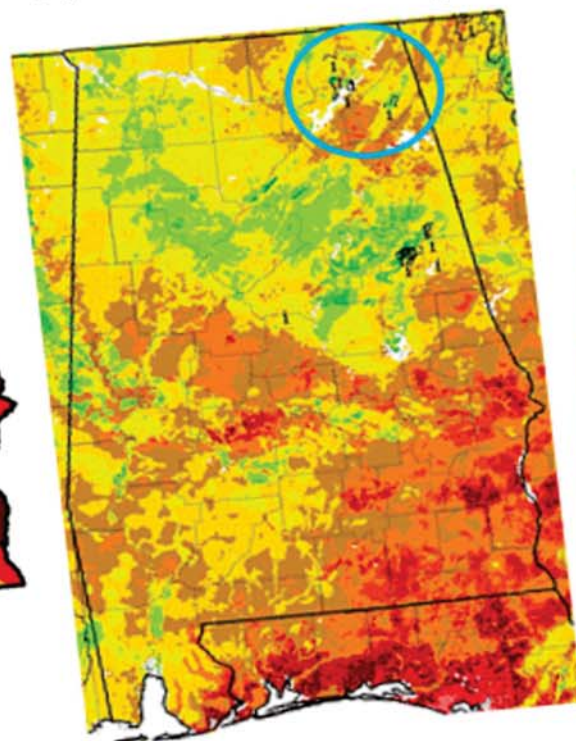
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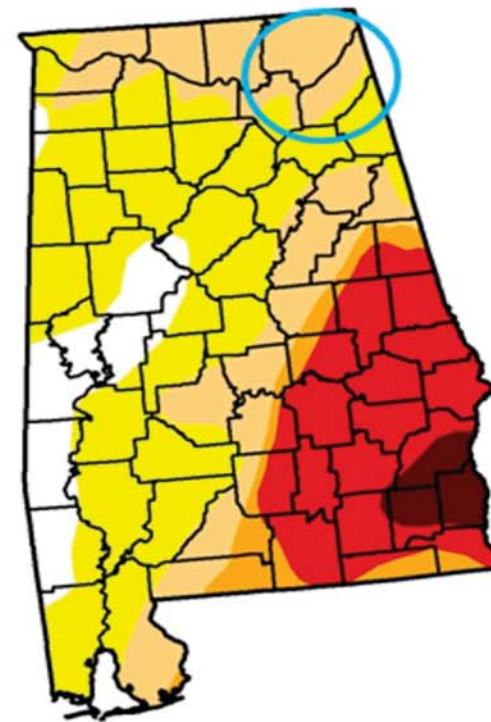
(a) USDM: 1 May 2012



(b) SPoRT-LIS: 8 May 2012



(c) USDM: 8 May 2012



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

## SPoRT soil moisture products provide guidance to drought monitoring community

- SPoRT provides high-resolution, real-time soil moisture and temperature output from the NASA Land Information System (LIS) to National Weather Service partners to assist in flood, drought, and convection forecasting.
- In this example, the high-resolution LIS (middle) was directly used by NWS Huntsville to provide input to the U.S. Drought Monitor to adjust drought characterization from D0 to D1 for DeKalb County, AL (circled).
- For farmers in this area, a higher drought characterization can result in financial aid that might not otherwise be available in lower drought categories